TIME CLOCKING CONTROLLER

User's Manual

A GUIDE TO

INSTALLATION AND OPERATION



Figure: An Time Clock

Table of Contents

SECTION 1

1.0 CONTROLLER

1.1 *Check Your Device Components*

A standalone controller constitutes the following components.

Primary Components	Details
controller	Depending on your purchased model, it has either a built-in Wiegand or Proximity Reader.
LCD	For the display of date and time as well as access status message.
12-key Keypad	The keys are used for programming and session clocking.
Line to 12V Power Supply	Power line is located at the back of the MT45 unit, to a 12V power-supply.
Card or Key-shaped Access Card	Access Cards for the MT45 unit comes in Wiegand or Proximity Format. **Reading:** **Key form -** Available with wiegand format only and reading requires touching the surface of the reader. **Card form** - For either Wiegand or Proximity format. Card form allows a maximum reading range of 2 inches from the surface of the reader. An external reader may have a reading range of 5 inches.
Sounder relay	The controller provides an output relay for sounder installation.

1.2 *General Reference*

Section	WHAT TO DO	REFERENCE TITLE
2	Set up the unit with connections to a Sounder device and a 12V power-supply. Ensure that you have the relevant Wiegand or Proximity formatted cards.	**MT45 Controller Diagram (Wiring); Turning on the Controller**
	Initialize the device before use. Select a card to be your master card in order to enable general programming.	**Initialization: To cold start and register a master card**
4	Program the device with relevant Timer, Sounder (Time Zone, Duration), Display Mode, User-enabled session change.	**To Program The Controller**
3	Regular operation commands	**Operation**
5	If you suspect that the device has malfunctioned, you need to perform basic tests over the device.	**To perform Diagnostic Test**

1.3 *Systems Profile*

Functional	
Card storage	Note that card storage is not available. The controller reads any valid card compatible with its Reader.
Transaction storage	Maximum transaction storage space is **1920** records (accounting for both 'IN' and 'OUT' clocking). Reads only 6-digit (20 bits) card. With 20-bit limited card, applying card number must not exceed '065536'.
Physical	
Power surge	The occurrence of power surge would cause the controller to self kick-start. Prior configurations will remain intact. Normal operation will not be affected. User is recommended to carry out diagnostic test to ensure data and memory is not corrupted.
Clock accuracy	Power surge does not affect the accuracy of the clock. Over the course of time, however, the clock might run-off by 30 seconds to 1 minute within a year. User is advised to update the clock in accordance to individual's demand on accuracy.

SECTION 2

2.0 TO START UP THE CONTROLLER

2.1 *Wiring*

Refer to appendices for wiring diagrams.

No.	Description	Reference No.
1	Cabling: Connection to a PC, Sounder, and Power Supply	CT45-501
2	Controller's wiring for reader	CT45-101
3	Networked wiring to an RS485 convertor	CT45-102

External READERS: Take note, that external readers are connectable at pins labelled CN5 or CN6.

2.2 *Cold Start & Master Card Registration*

What to do first	What you will see	What to do next
Press Key '1', turn off and on the power then release the Key.	**MT45……v**<x.y.z>, where <x.y.x> is the version number	Key in **PIN: '123456'** Key in **Master: <Your selected card>**
	Card Type: Wieg	**To do selection of a Card Type:** Key 8 (UP '▲') Key 0 (Down '▼') Select your relevant card type: Wieg or Prox. It is 'Wieg' by default. Press 'Enter' to initialize the controller.
	……Initialize……..	
	<hh:mm:ss> <date>	

SECTION 3

3.0 OPERATION

3.1 *Menu Selection*

To do selection of a function	Usage description	
Keys	**For Programming**	**For Regular Operation** [If **User**-enable **Mode** is set **ON**].
'8' (UP '▲')	To scroll through functional menu or sub-menu items.	**Keys between '0' and '9'** (including '0' and '8') are for the selection of session.
'0' (Down '▼')		
'#' (Enter)	It is used for entering sub-menu level.	For the selection of **'OUT'** indicator.
'*' (ESC)	It is to escape from a sub-menu level back to main menu or to escape from the programming mode.	For the selection of **'IN'** indicator.

3.2 *Functional programming tree chart of the MT45*

Date & Time

Timer

Time Zone
- Sounder Time Zone

Controller Setup
- Sounder Duration
- Set Double Clock

Comm setup
- Unit No
- Baud Rate

Printing
- Print Transaction

Diagnostic Test
- Test outputs
- Comm Echo Test
- Keypad Test
- Reader Test
- Memory test

3.3 *Logical Initialisation*

		What to do	What you get
Comm setup			
|________	Unit No	Unit No: <between 01 and 16> Press 'Enter'	Controller's unit number for communication identification.
		Response	
		If entered unit no. is out of bound	System will ignore value when user press 'Enter'.
		If entered unit no. is valid	System will display: 'Unit No', meaning returned to menu item.
|________	Baud Rate		
	Briefing 9600 is the default rate for PC and controller's communication, as well as for daisy chaining among controllers in a single bus. (Refer to wiring CT45-102.) Other baud rates are alternatives. Refer to your local dealer if you need assistance.	**To select a particular baud rate** Use: Key 8 (UP '▲') Key 0 (Down '▼')	Baud Rate: 9600 Or Baud Rate: 4800 Or Baud Rate: 2400
Date & Time			
		Ddmmyyw..<0000000>	**dd:** day of the month (01 - 31) **mm:** month (01 - 12) **yy:** year (00 - 99) **w:** day of the week (0 - 6 for Sun to Mon)
		Hhmmss….<000000>	**hh:** hours (00 - 23) **mm:** minutes (00 - 59) **ss:** seconds (00 - 59)

3.4 *Clocking Information*

Configuration Sequence		
Step 1 *Define*		***Step 2*** *Define*
Timer	→	**Sounder Time Zone**

Limitation notes	
Timer	**Sounder Time Zone**
There are 4 available Timer records (1, 2, 3 and 4). Each Timer record constitutes 16 activation-times, for the purposes of Sounder. When configuring, the hours range is between 0001 and 2359.	The turning on of sounder is based upon its applied time zone and sounding duration. There is only 1 set of Time zone consisting of 7-weekdays' timers. So, each weekday's timer would be either 1, 2, 3 or 4, which in turn relate to sets of activation-times. A Time Zone ← 7 Day's Timers ← Each Day's Activation-times

3.5 *Clocking*

Subject	Description on Operational Responses
Clocking	Just badge a valid card at the controller. Card will be registered with the displaying of card number and indicator '>> PASS <<'. The controller will not respond if invalid card format is attempted. It allows continuous swiping (or high traffic clocking).
Double Clocking (DC)	To avoid the registration of double clocking sequentially, user is advised to apply relevant DC card reject duration (with at the least 3 seconds) (e.i. via 'DC Time' - refer to programming section). The controller, however, would actually able to read the same card again within the same minute if there is intermediate distinct card number(s) being applied.

3.6 *Printing of Records*

The printing of records in MT45 concern only recorded transactions.

How it is done

- Via a TM, TM32 or Hyper Terminal; or
- Via software, called WinCom DigiTime (for transactions only). Refer to its manual.

Subject	Description
Recorded Transactions	System has been allocated with 1500 transactions space. Steps [MT45] -------------------- [PC] Ensure that the controller (at CN7) is connected to your PC's communication port via an RS232 cable. Your 'TM' is activated accordingly. At MT45, enter programming mode using your master card. Select 'Printing' and follow by 'Print Tran' menu. Output **** Micro-ID MT45 **** **** CLOCKING REPORT **** **UNIT #: <controller's unit no for identification>** **MT45 V<version number>** **<dd/mm/yy> <hh:mm> <card number>** **SAMPLE** ** Micro-ID MT45 ** ** CLOCKING REPORT ** UNIT # : 16 MT45V1.0.1 01/10/02 03:04 050607 04/10/02 09:46 030328 04/10/02 09:46 030450 08/10/02 15:33 030420 08/10/02 16:29 030420

SECTION 4

4.0 GENERAL PROGRAMMING

		What to do	What you get
Timer			
	(Applicable to Sounder Time Zone only. There are 4 available Timers. For each Timer, there are 16 available entries of activation-times.)	Press 'Enter'. Key in **Timer** Set: <between 01 and 04> For the selected Timer set: At '**1:**', key in <between 0001 and 2359> Do the same, if relevant, for '**2:**', up to '**16:**'. Press 'Enter' to save the setup.	System exits back to Timer menu item upon the completion of each Timer setup.
Time Zone			
|_________	**Sounder Time Zone**		
	(There is only 1 sounder time-zone that applies any of the defined Timers.)	Press 'Enter'. Key in the TZ Set by: Key in for **Sunday:** <Timer between 01 and 04> Press ' Enter' for subsequent day. Do the same, where relevant, for **Monday** to **Saturday**.	System exits back to Sounder TZ menu item upon the completion of the setup.

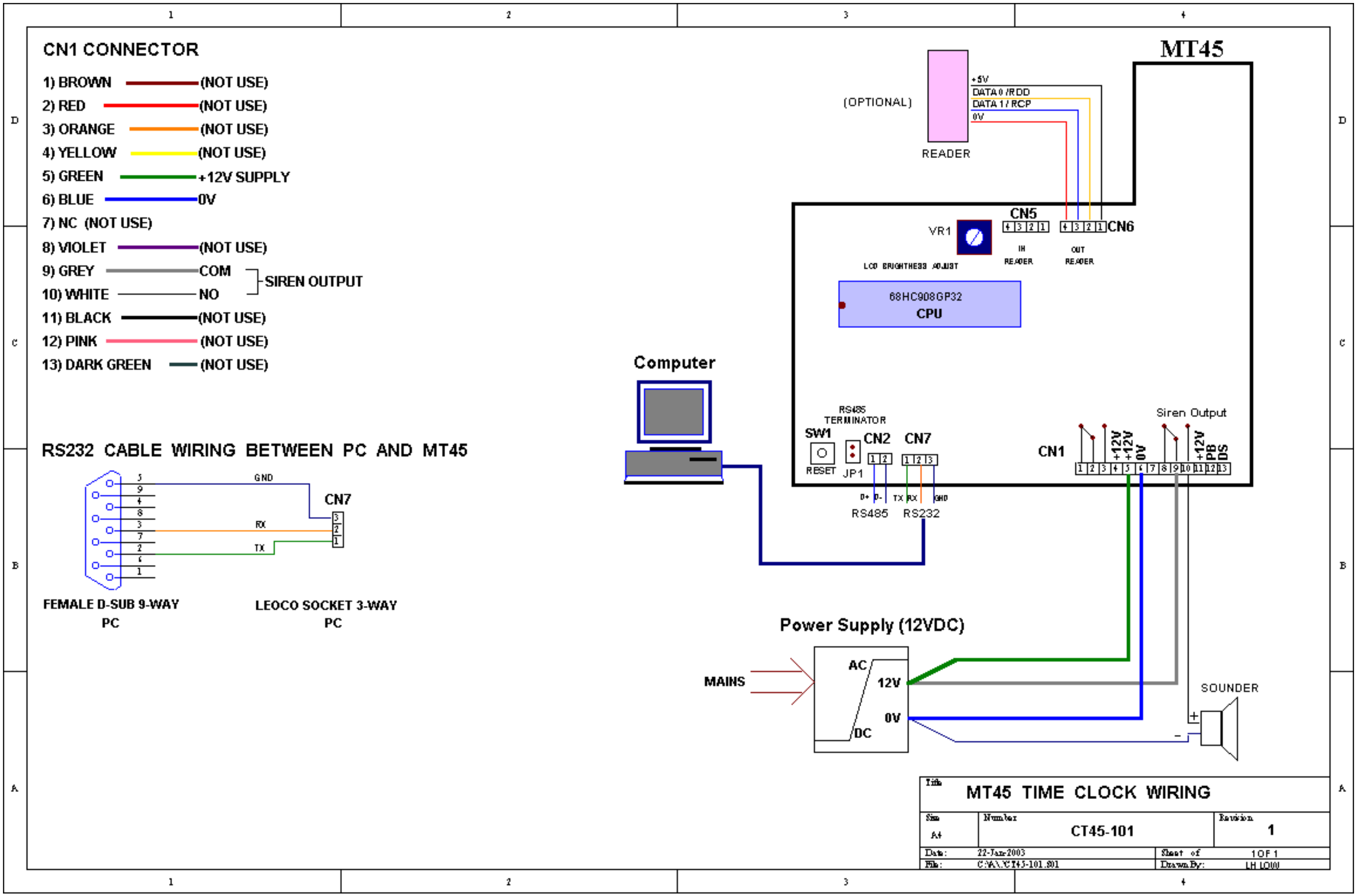
		What to do	What you get
Controller Setup			
|________	**Sounder Duration**		
	(It is set in seconds)	Press 'Enter'. Key in **Sounder ON**: <between 00 and 99> Press 'Enter' to confirm setup.	Sounder will be turned on for the specified duration whenever the clock matches with the set timer's activation time.
|________	**Set Double Clock**		
	(It is set in seconds)	Press 'Enter'. Key in **DC Time**: <between 00 and 99> Press 'Enter' to confirm setup.	User will be prevented from clocking (badging card more than once) continuously within the specified duration.

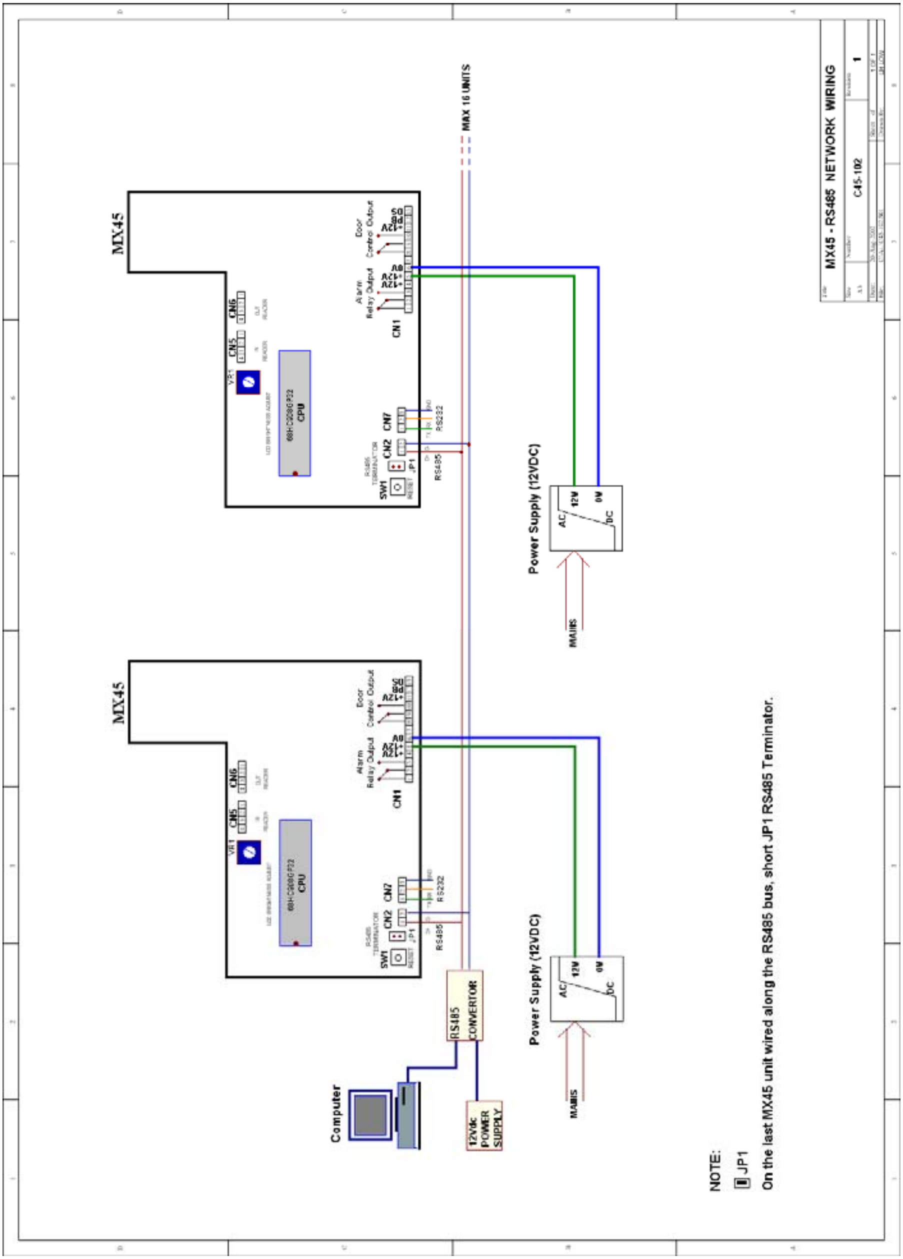
SECTION 5

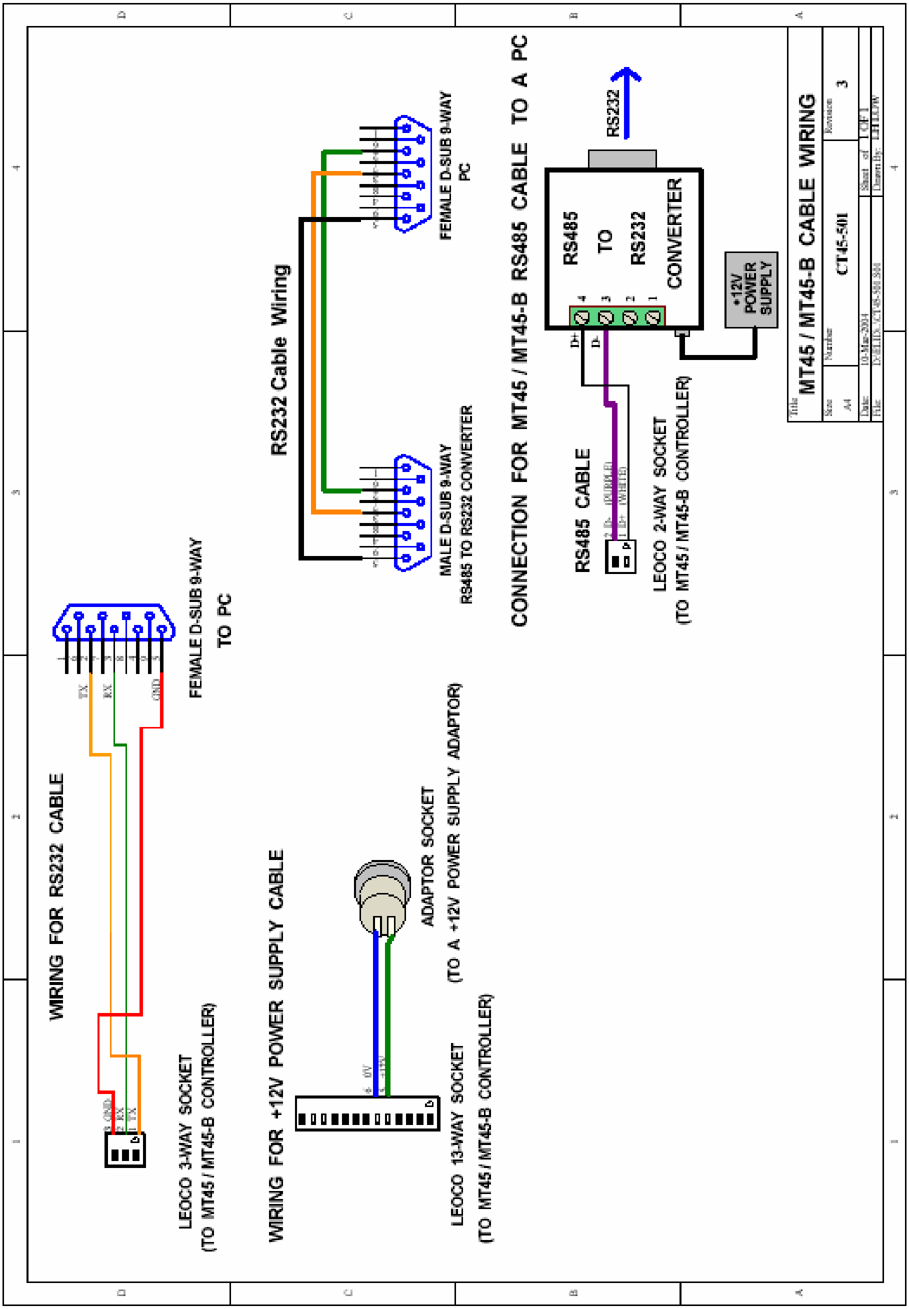
5.0 DIAGNOSTIC TEST

		What to do	What you get
Diagnostic Test		Press 'Enter' to get into diagnostic sub-menu / field.	
|________	**Test Outputs**		
		Press '1' on the keypad to activate Sounder Press 'Esc' to exit or turn off the tests.	<u>Default Display</u> **1:Sounder** <u>Action</u> Pressed '1' ∏ Sounder will be activated.
|________	**Comm Echo Test**		
		Activate TM, TM32 or Hyper Terminal Type something at PC's keyboard or press keys on controller's keypad.	PC's screen will display letters / numbers when pressing keys at controller's keypad. Likewise, controller's LCD will display letters / numbers when typing at PC's keyboard.
|________	**Keypad Test**		
		Press keys between '1' and '9', and 'Enter'. Pressing 'Esc' will cause system exit back to sub-menu.	Corresponding keyed number will be displayed on the controller's LCD.

		What to do	What you get
Diagnostic Test		Press 'Enter' to get into diagnostic sub-menu / field.	
|________	**Reader Test**		
		Wave / Badge card at controller / Reader.	Corresponding Reader's and Card's information will be displayed on the controller's LCD: **C: <Card no.>** **P: <PIN no.>** At TM or Hyper Terminal screen: C: <XXXXXX> P: <xxxx> C: <YYYYYY> P: <yyyy>
|________	**Memory Test**		
		'Press # to Start' will be displayed. Press 'Enter'.	If there is no problem with the controller's memory, '……GOOD……' will be displayed; otherwise '……BAD……". Under very rare circumstances, if 'Bad' reading is obtained: Conduct a cold start to the controller and repeat the memory test. If problem persists, refer to your local dealer for assistance. Most likely the controller requires repair.


CN1 CONNECTOR
1) BROWN (NOT USE)
2) RED (NOT USE)
3) ORANGE (NOT USE)
4) YELLOW (NOT USE)
5) GREEN +12V SUPPLY
6) BLUE 0V
7) NC (NOT USE)
8) VIOLET (NOT USE)
9) GREY COM
10) WHITE NO
SIREN OUTPUT
11) BLACK (NOT USE)
12) PINK (NOT USE)
13) DARK GREEN (NOT USE)
RS232 CABLE WIRING BETWEEN PC AND MT45
GND
RX
TX
CN7
FEMALE D-SUB 9-WAY
PC
LEOCO SOCKET 3-WAY
PC
Computer
MT45
(OPTIONAL)
READER
+5V
DATA 0 / RDD
DATA 1 / RCP
0V
CN5
CN6
VR1
IN READER
OUT READER
LCD BRIGHTNESS ADJUST
68HC908GP32
CPU
RS485 TERMINATOR
SW1
RESET
JP1
CN2
CN7
D+ D-
TX RX GND
RS485
RS232
CN1
Siren Output
+12V
+12V
0V
+12V
PB
DS
Power Supply (12VDC)
MAINS
AC
DC
12V
0V
SOUNDER
MT45 TIME CLOCK WIRING
Number
CT45-101
Revision
1
Size
A4
Date: 22-Jan-2003
File: C:\A\CT45-101.S01
Sheet of 1 OF 1
Drawn By: LH LOW


MX45 - RS485 NETWORK WIRING
C45-102
MX45
MX45
CN1
CN2
CN5
CN6
CN7
VR1
SW1
JP1
CPU
RS485
RS232
Alarm
Relay Output
Door
Control Output
MAX 16 UNITS
Power Supply (12VDC)
Power Supply (12VDC)
12V
0V
AC
DC
MAINS
RS485
CONVERTOR
12Vdc
POWER
SUPPLY
Computer
NOTE:
JP1
On the last MX45 unit wired along the RS485 bus, short JP1 RS485 Terminator.


WIRING FOR RS232 CABLE
LEOCO 3-WAY SOCKET
(TO MT45 / MT45-B CONTROLLER)
FEMALE D-SUB 9-WAY
TO PC
TX
RX
GND
WIRING FOR +12V POWER SUPPLY CABLE
LEOCO 13-WAY SOCKET
(TO MT45 / MT45-B CONTROLLER)
ADAPTOR SOCKET
(TO A +12V POWER SUPPLY ADAPTOR)
0V
+12V
RS232 Cable Wiring
MALE D-SUB 9-WAY
RS485 TO RS232 CONVERTER
FEMALE D-SUB 9-WAY
PC
CONNECTION FOR MT45 / MT45-B RS485 CABLE TO A PC
RS485 CABLE
LEOCO 2-WAY SOCKET
(TO MT45 / MT45-B CONTROLLER)
D+
D-
RS485
TO
RS232
CONVERTER
RS232
+12V
POWER
SUPPLY
MT45 / MT45-B CABLE WIRING
CT45-501
A4
3